

Feature

- Hermetic ceramics-metal stud structure
- Capacity of supporting high surge current

Typical Application

- DC motor control, Control DC power supply
- AC switch and thermal control, Synchronous motor excitation

$I_{T(AV)}$	10A
V_{DRM}/V_{RRM}	100-3000V
I_{TSM}	415A
I^2t	725 A ² s

Voltage Ratings

Type number	Voltage Code	V_{DRM}/V_{RRM} max. repetitive peak and off-state voltage (1) V	V_{RSM} non-repetitive peak voltage (2) V	I_{DRM}/I_{RRM} @ $T_J=T_J$ mA
KP10A	10	100	150	20
	20	200	300	10
	40	400	500	
	60	600	700	
	80	800	900	
	100	1000	1100	
	120	1200	1300	
	140	1400	1500	
	160	1600	1700	

On-state Conduction

Symbol	Characteristic	KP10A		Units	Conditions		
		10-120	140-160				
$I_{T(AV)}$	Max. average on-state current @ Case temperature	10	10	A	180°C sinusoidal conduction		
$I_{T(RMS)}$	Max. RMS on-state current	40	40	A			
I_{TSM}	Max. peak, one-cycle non-repetitive surge current	420	398	A	t=10ms	No voltage reappplied	Sinusoidal half wave Initial $T_J=T_J$ Max
		440	415		t=8.3ms		
		350	335		t=10ms	100% V_{RRM} reappplied	
		370	350		t=8.3ms		
I^2t	Maximum I^2t for fusing	790	725	A^2S	t=10ms	No voltage	
		867	795		t=8.3ms		
		560	510		t=10ms	100% V_{RRM} reappplied	
		615	560		t=8.3ms		
$V_{T(TO)1}$	Low level value of threshold voltage	0.99	0.99	V	$(16.7\% \times I_{T(AV)} < I < \pi \times I_{T(AV)}, T_J=T_J$ Max		
$V_{T(TO)2}$	High level value of threshold voltage	1.40	1.15		$(I > \pi \times I_{T(AV)}), T_J=T_J$ Max		
R_{t1}	Low level value of on-state slope resistance	10.1	11.73	$m\Omega$	$(16.7\% \times I_{T(AV)} < I < \pi \times I_{T(AV)}, T_J=T_J$ Max		
R_{t2}	High level value of on-state slope resistance	5.7	10.05		$(I > \pi \times I_{T(AV)}), T_J=T_J$ Max		
V_{TM}	Max. on-state voltage	1.70	1.80	$I_{PK}=79A, T_J=25^\circ C$			
I_H	Maximum holding current	130		mA	$T_J=25^\circ C$, Anode supply 6V, resistive load		
I_L	Latching current	200					

Symbol	Charteristic	KP10A	Units	Conditions
di/dt	Critical rate of rise of on-state current $V_{DRM} \leq 600V$ $V_{DRM} \leq 800V$ $V_{DRM} \leq 1000V$ $V_{DRM} \leq 1600V$	200 180 160 150	A/us	$T_J = T_J \text{ max.}, V_{DM} = V_{DRM}$ $, 15 \Omega, t_q = 6\mu s,$ $t_r = 0.1\mu s \text{ max}$ $I_{TM} = (2 \times \text{rated di/dt}) A$
t_{qt}	Typical turn-on time	0.9	us	$T_J = 25^\circ C$ $A_t = V_{DRM}/V_{RRM}, T_J = 125^\circ C$
t_{rr}	Typical reverse recovery time	4		$T_J = T_J \text{ max},$ $I_{TM} = I_{T(AV)}, t_q > 200\mu s, di/dt = -10A/\mu s$
t_q	Typical turn-off time	110		$T_J = T_J \text{ max}, I_{TM} = I_{T(AV)}, t_q > 200\mu s, V_R = 100V$ $di/dt = -10A/\mu s, dv/dt = -20A/\mu s, V_{DM} = 67\% V_{DRM}$ $0V-100W$
dv/dt	Max. critical rate of rise of off-state voltage	100	V/us	$T_J = T_J \text{ max}, V_{DM} = 67\% V_{DRM}$
P_{GM}	Gate trigger current	8.0	W	$T_J = T_J \text{ max}$
$P_{G(AV)}$	Gate trigger voltage	2.0	W	$T_J = T_J \text{ max}$
I_{GM}	Stored temperature	1.5	A	$T_J = T_J \text{ max}$
$-V_{GM}$	Thermal impedance node to the shell	10	V	$T_J = T_J \text{ max}$
I_{GT}	Thermal impedance (shell to powder)	90 60 35	mA	$T_J = -65^\circ C$ $T_J = 25^\circ C$ $T_J = 125^\circ C$
V_{GT}	Mounting torque	3.0 2.0 1.0	V	$T_J = -65^\circ C$ $T_J = 25^\circ C$ $T_J = 125^\circ C$
I_{GD}	Approximate weight	2.0	mA	$T_J = T_J \text{ max.}, V_{DRM} = 67\% V_{DRM}$
V_{GD}	Critical rate of rise of on-state current $V_{DRM} \leq 600V$ $V_{DRM} \leq 800V$ $V_{DRM} \leq 1000V$ $V_{DRM} \leq 1600V$	0.2	V	$T_J = T_J \text{ max.}, V_{DRM} = 67\% V_{DRM}$
T_J	Typical turn-on time	-65-125	$^\circ C$	
T_{stg}	Typical reverse recovery time	-65-125	$^\circ C$	
$R_{th(j-c)}$	Typical turn-off time	0.75	K/W	
$R_{th(c-s)}$	Max. critical rate of rise of off-state voltage	0.35	K/W	
T	Gate trigger current	3.1	Nm	
W_t	Gate trigger voltage	27	g	

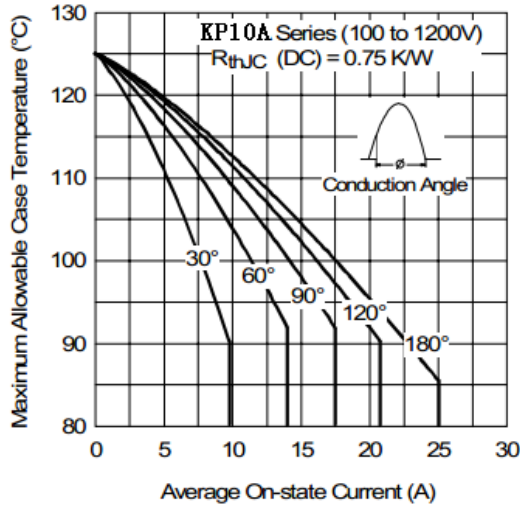


Fig. 1 - Current Ratings Characteristic

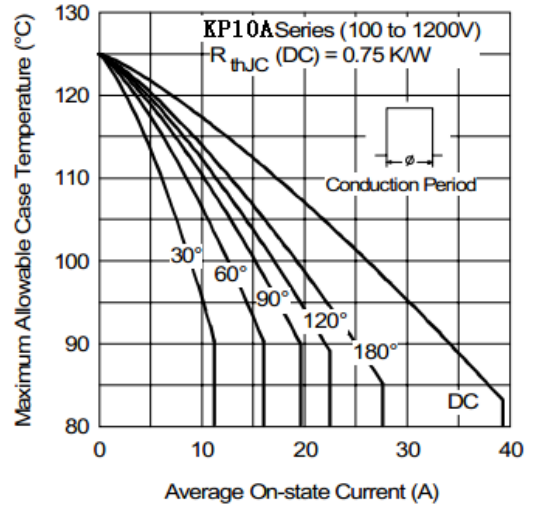


Fig. 2 - Current Ratings Characteristic

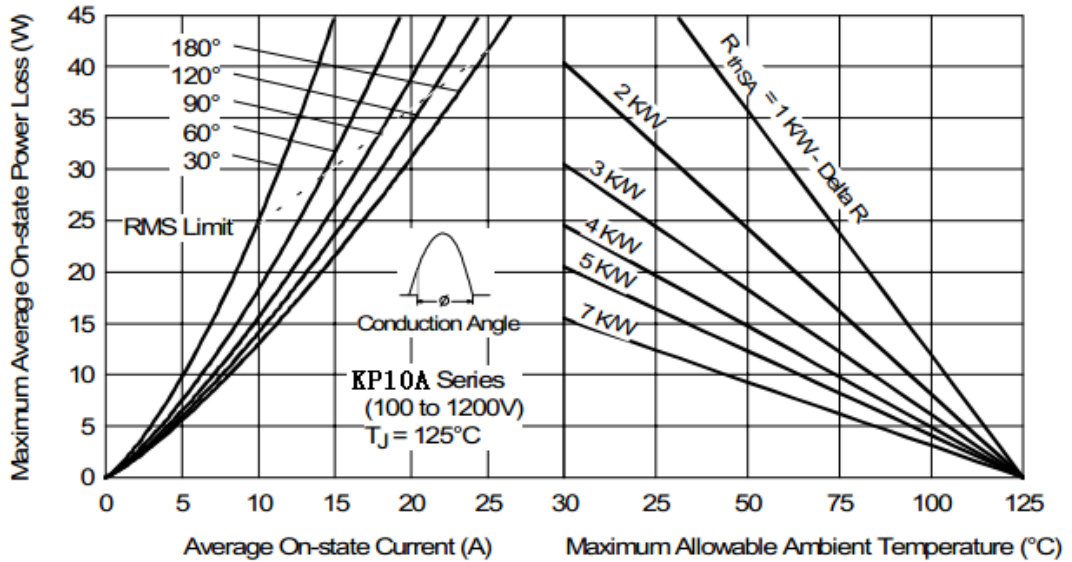


Fig. 3 - On-state Power Loss Characteristics

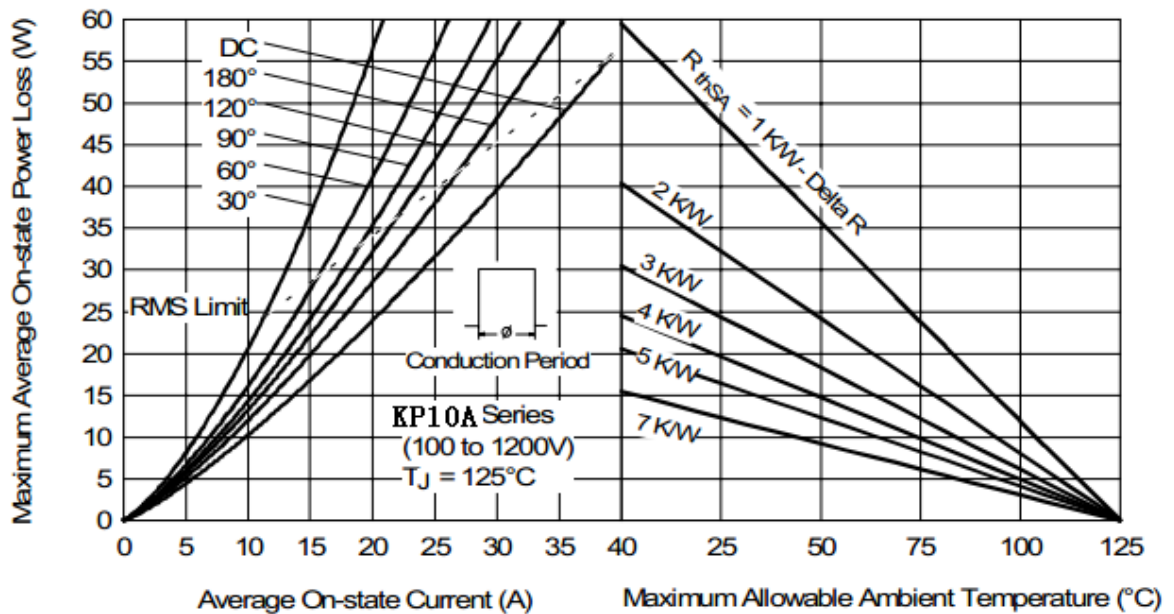


Fig. 4 - On-state Power Loss Characteristics

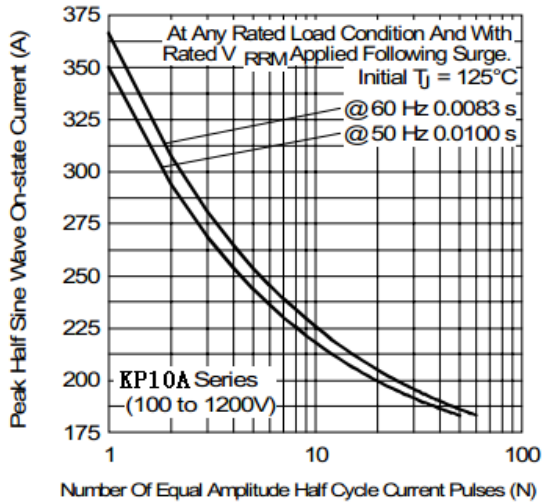


Fig. 5 - Maximum Non-Repetitive Surge Current

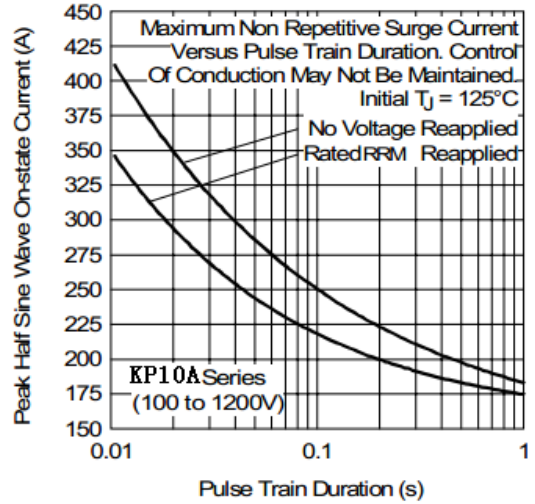


Fig. 6 - Maximum Non-Repetitive Surge Current

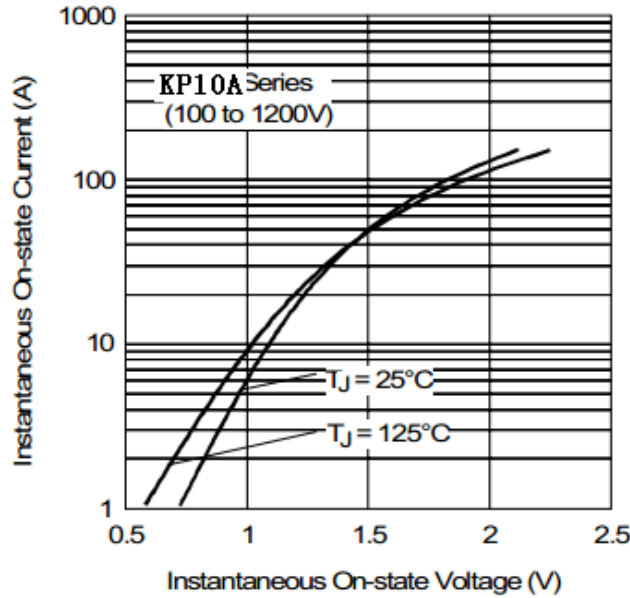


Fig. 7 - Forward Voltage Drop Characteristics

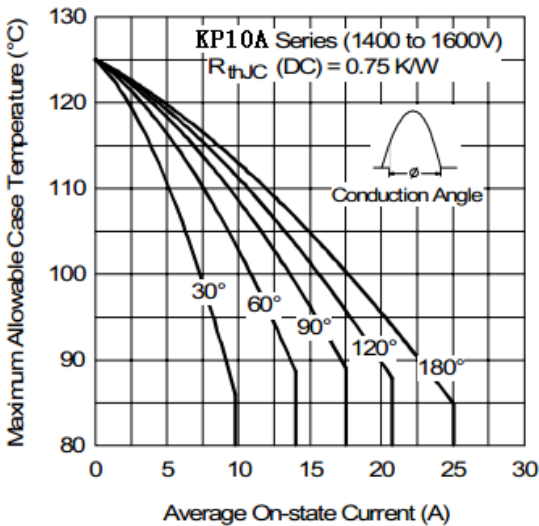


Fig. 8 - Current Ratings Characteristics

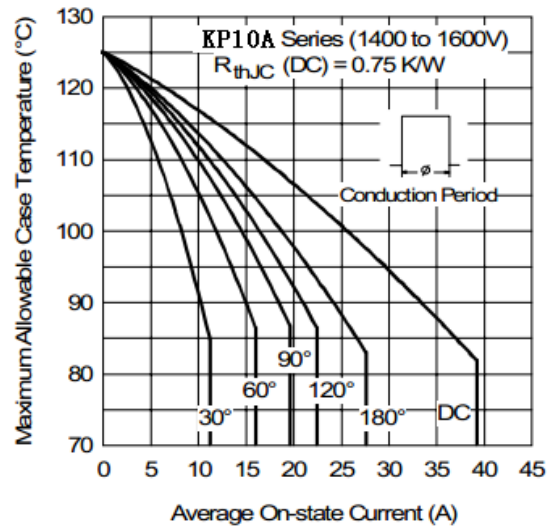


Fig. 9 - Current Ratings Characteristics

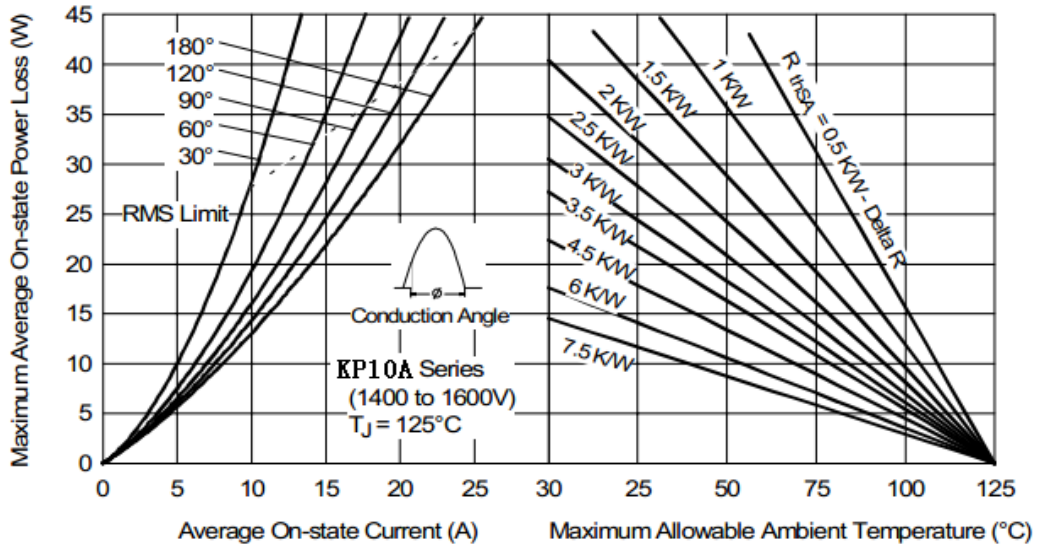


Fig. 10 - On-state Power Loss Characteristics

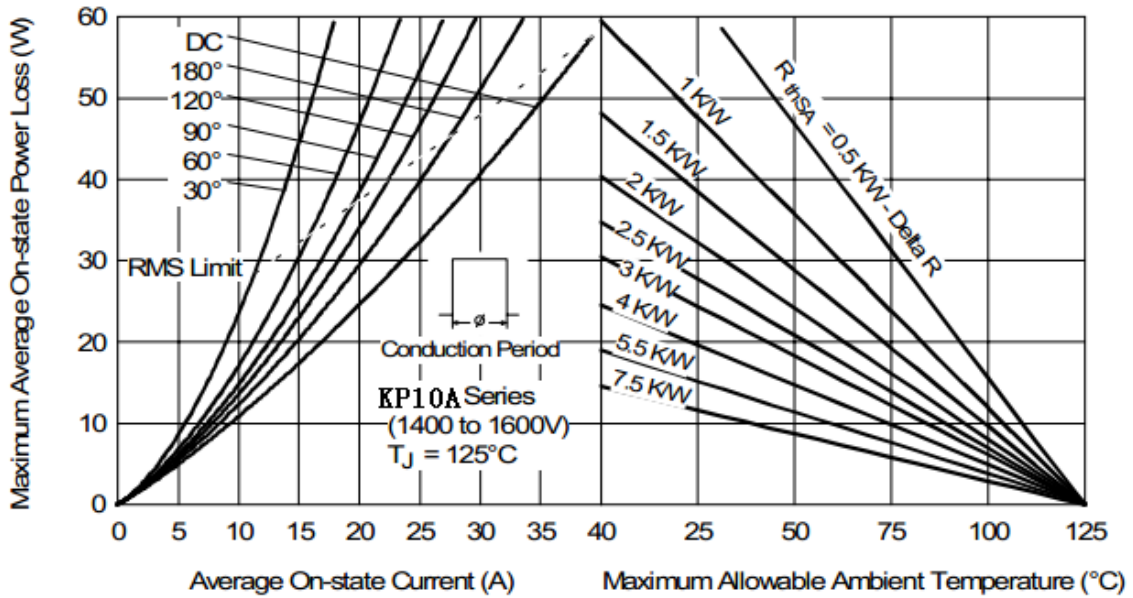


Fig. 11 - On-state Power Loss Characteristics

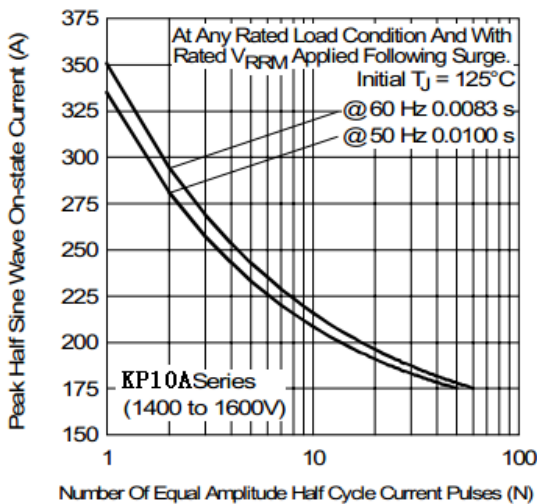


Fig. 12 - Maximum Non-Repetitive Surge Current

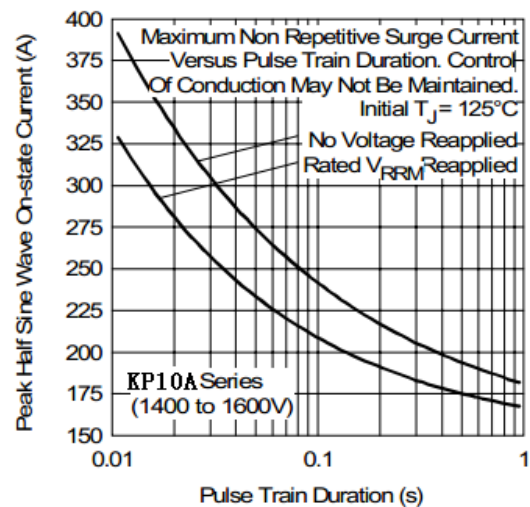


Fig. 13 - Maximum Non-Repetitive Surge Current

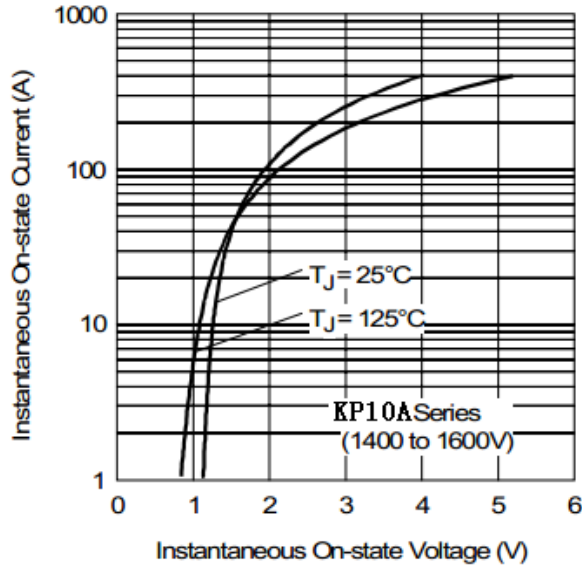


Fig. 14 - Forward Voltage Drop Characteristics

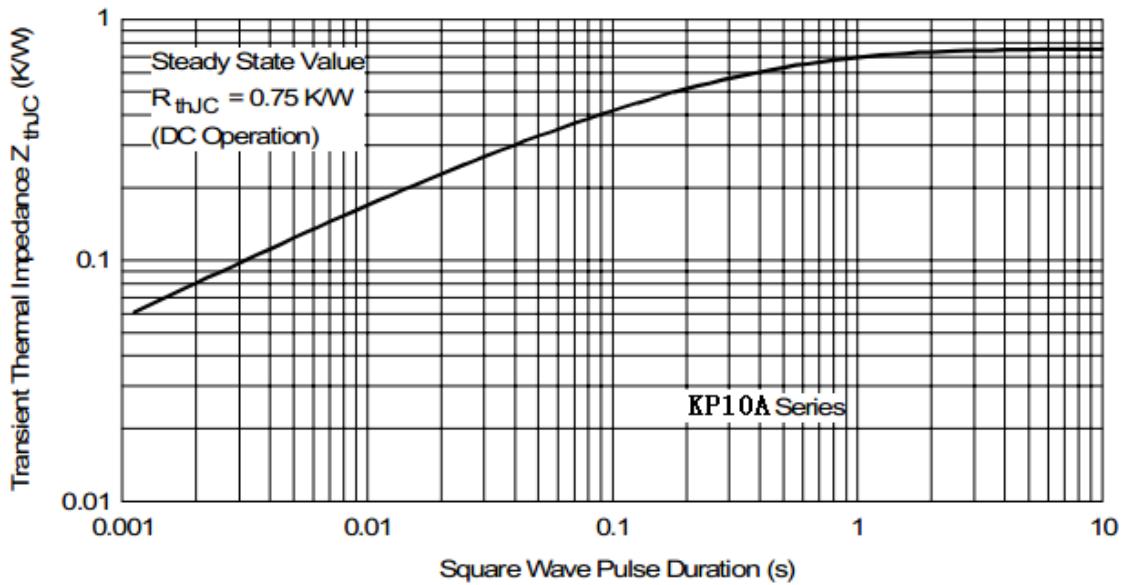


Fig. 15 - Thermal Impedance Z_{thJC} Characteristics

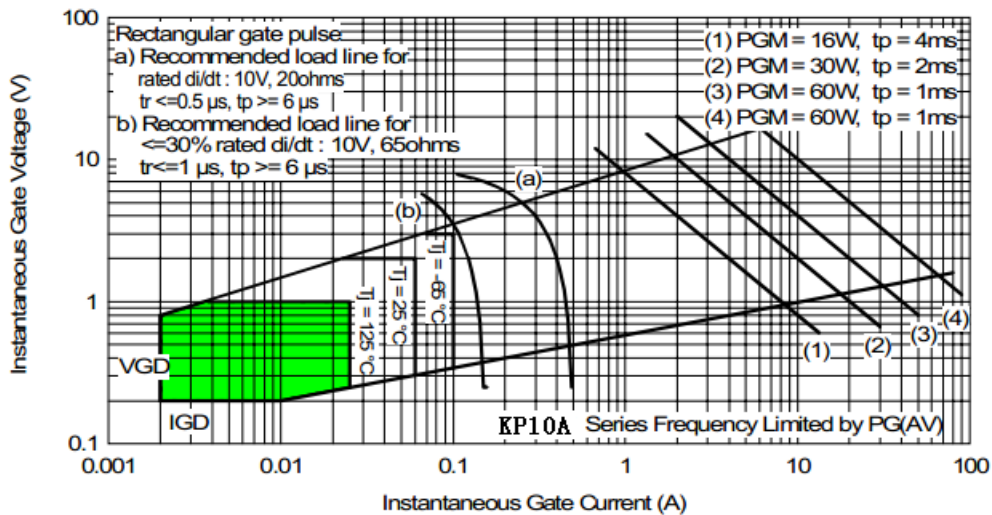
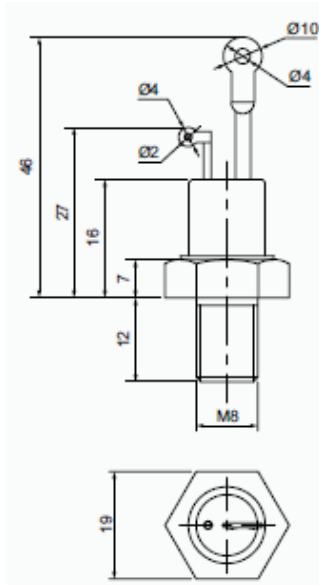


Fig. 16 - Gate Characteristics

Outline:



1